

Mortality of patients admitted for COVID-19 in Spanish ICUs was 31 %

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The findings from CIBERESUCICOVID, led by the group leader of CIBERES at the Hospital Clínic de Barcelona, Antoni Torres, were presented during a hybrid event held at the Campus de Madrid del Instituto de Salud Carlos III. Credit: CIBERESUCICOVID

In-hospital mortality in patients admitted to Spanish Intensive Care Units (ICU) during the pandemic was 31%, and factors associated with poorer prognoses are associated with the need for mechanical ventilation, age, initial severity, associated COPD, decreased platelets and increased creatinine, comparing days 1 and 3 of artificial ventilation. These are the main findings of the project Factores de riesgo y pronóstico de pacientes infectados por COVID (Risk factors and prognosis of COVID-infected patients) and the follow up one year later of patients in Spanish ICUs (CIBERESUCICOVID), developed by researchers from the Respiratory Diseases Networking Biomedical Research Centre (CIBERES).

The project forms part of the research launched by the COVID-19 Fund throughout 2020 and managed by the ISCIII, and which received a total funding of 1,750,000 euros. It has also enjoyed the support of the Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias (SEMICYUC) and the Sociedad Española de Neumología y Cirugía Torácica (SEPAR), as well as the participation of the Barcelona Supercomputing Centre (BSC).

The findings from this multicentre study, led by the group leader of CIBERES at the Hospital Clínic de Barcelona, Antoni Torres, were presented during a hybrid event held at the Campus de Madrid del Instituto de Salud Carlos III, in which the risk and prognostic factors of COVID-19-infected patients admitted to the 69 participating Spanish ICUs since the start of the pandemic in Spain were outlined.

In addition, patients have also been closely monitored for up to 6 months after ICU discharge and hospital discharge to determine the mortality rate at one year after discharge of COVID-19 patients who have survived after admission to [critical care](#), and this rate was set at 1%.

Since fieldwork began with the first patient in June 2020, CIBERESUCICOVID, which will run until 31 December 2021, has

studied more than 5,700 patients and has analyzed 1,068 [blood samples](#) for epigenetic and biomarker studies, far exceeding the initial goals set.

Among the main findings, CIBERES researchers have identified acquisition of in-hospital pneumonia during admission as a factor associated with persistence of coronavirus symptoms at 3 months. In addition, Antoni Torres explains, "we have studied the effect of corticosteroids on in-[hospital mortality](#), finding several phenotypes in which no benefit is observed depending on age, initial severity, inflammatory status and absence of lymphopenia. Our findings, therefore, will help to determine which critical patients should receive corticosteroids."

Lack of control of virus replication—the key to the problem

Critical illness caused by COVID-19 is characterized by a lack of control of virus replication by the immune system, reflected in systemic viral shedding, which is paralleled by a dysregulated host response associated with a poorer prognosis.

According to CIBERES researcher Jesús Bermejo, who also took part in the project, "the high levels of viral RNA in plasma, the presence of antigenemia i.e. when SARS-CoV-2 proteins pass into the blood—which reflects poor control of virus replication with damage to the alveolar-capillary barrier—and low levels of anti-S antibodies, are predictors of poor prognosis, but they are also potential predictive enrichment markers to better guide antiviral or monoclonal antibody treatments in this disease."

Severe clinical conditions show characteristic profiles in both plasma and bronchial secretions, which provide molecular information on the

mechanisms mediating the deterioration of the critically ill patient, and "are useful tools in clinical decision-making," Antoni Torres also indicates.

Similarly, functional and structural lung alterations in survivors of severe COVID-19 are associated with specific transcriptomic and proteomic blood patterns, and the multifactorial mechanisms linked to these profiles form the basis for developing therapeutic strategies.

The CIBERESUCICOVID project has been the driving force behind the development of the "In Vitro Method For Predicting Mortality In COVID-19 Patients" patent. Their findings have been reported in 18 [scientific publications](#), including the *Journal of Internal Medicine* last October; results have also been presented at national and international conferences and congresses and have been widely publicised in the national and international media.

More information: Results:

www.ciberes.org/sala-de-prensa/ciberesucicovid

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